

Age trends in genetic parameters of wood density components in 46 half-sibling families of *Pinus pinaster*

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Abstract:

This study contributes to the *Pinus pinaster* Ait. breeding programme, which is reaching the third generation by adding information on wood quality of 46 open-pollinated families from a progeny trial located in Leiria, Portugal, that originated from seed collected in a clonal seed orchard. A total of 552 seventeen-year-old trees were sampled at 2 m height. Trends were studied from the pith outward in variance components and narrow-sense heritability (h^2) of wood density components and ring-width characteristics as well as genetic correlations between cambial ages. Mean ring density (RD), minimum density (MND), maximum density (MXD), earlywood density (EWD), latewood density (LWD), earlywood width, latewood width, ring width, latewood percentage, and heterogeneity index were determined using X-ray densitometry procedures. RD had higher genetic control ($h^2 = 0.63$), and heritability values of earlywood components ($h^2_{MND} = 0.54$, $h^2_{EWD} = 0.60$) exceeded those of latewood components ($h^2_{MXD} = 0.34$, $h^2_{LWD} = 0.26$). Heritabilities increased with ring number from pith for almost all wood density components, and there were high age-age genetic correlations for wood density traits ($r_g > 0.98$).

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